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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,636	03/14/2008	David Wollan	3029-000089/US/NP	3139
27572 7590 10/14/2010 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			EXAMINER STULII, VERA	
			ART UNIT 1781	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/563,636	<b>Applicant(s)</b> WOLLAN, DAVID	
	<b>Examiner</b> VERA STULII	<b>Art Unit</b> 1781	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 6-8, 10-17, 19, 30 and 33-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-8, 10-17, 19, 30 and 33-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Claims 20-29, 31 and 32, withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 08/04/2010.

### ***Claim Objections***

Claim 19 is objected to because of the following informalities: claim 19 depends from the cancelled claim 18. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**Claims 6, 10-12, 15-17, 19, 30, 33-35 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nielsen (WO 92/08783) in view of Michaels (WO 93/22036).**

Nielsen discloses dealcoholization of a naturally fermented beverage comprising:  
A) optionally, contacting the beverage with a microfiltration membrane, to obtain a permeate and a retentate with, respectively, lower and higher concentrations of high molecular weight turbidity causing compounds; B) optionally, contacting beverage or the microfiltration permeate with a nanofiltration membrane, to obtain a permeate and a retentate with, respectively, lower and higher concentrations of aroma and flavor

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containing compounds, C) contacting the microfiltration permeate or the nanofiltration permeate with a reverse osmosis membrane, which selectively permeates ethanol and selectively retains aroma and flavor containing compounds, to obtain a permeate and a retentate with, respectively, higher and lower concentrations of ethanol, and lower and higher concentrations of aroma and flavor containing compounds (Abstract). Thus, Nielsen discloses two or three step membrane process for the removal of alcohol from naturally fermented beverage products (page 1 lines 1-5). Nielsen also discloses that "it is desirable to produce low alcohol or non-alcoholic beer and wine, and yet retain the flavor taste of such beer and wine" (page 1 lines 20-25).

More specifically, in regard to claims 6 and 35, Nielsen discloses the method of reducing the alcohol content of an alcohol containing beverage including the steps of:

B. contacting a nanofiltration feed stream comprising a naturally fermented beverage or the microfiltration permeate stream with a nanofiltration membrane, having a molecular weight cutoff of from 100 to 10,000, under conditions such that the nanofiltration feed stream is separated into an nanofiltration permeate stream which has a lower concentration of aroma and flavor containing compounds, and an nanofiltration retentate stream which has a higher concentration of aroma and flavor containing compounds as compared to the nanofiltration feed stream;

C. contacting a reverse osmosis feed stream comprising the microfiltration permeate or the nanofiltration permeate with a reverse osmosis membrane, which selectively permeates ethanol and selectively retains aroma and flavor containing compounds under conditions, such that the reverse osmosis feed stream is separated into a reverse osmosis permeate stream which is higher in ethanol concentration and lower in aroma and flavor containing compounds, and a retentate stream which is lower in ethanol concentration and higher in aroma and flavor containing compounds, as compared to the reverse osmosis feed stream; characterized in that, either or both of steps

A. or B. must be performed, and if step B is performed the reverse

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osmosis retentate and the nanofiltration retentate are recombined subsequent to step C (page 7 bottom paragraph-page 8 paragraphs 1-3).

Nielsen does not disclose forming dealcoholized permeate by contacting a first side of a hydrophobic microporous membrane with said raw permeate and contacting a second side of the membrane with a strip solution to extract alcohol therefrom to form a dealcoholised permeate. Michaels discloses a process for reducing the alcohol content of an aqueous mixture comprising the steps of:

(a) contacting one surface of a microporous hydrophobic membrane with the aqueous mixture;

(b) contacting the other surface of the membrane with water or a dilute aqueous saline solution. Therefore, Michaels discloses forming dealcoholized permeate by contacting a first side of a hydrophobic microporous membrane with said raw permeate and contacting a second side of the membrane with a strip solution to extract alcohol therefrom to form a dealcoholised permeate.

Since Nielsen discloses dealcoholization of a naturally fermented beverage, where nanofiltration permeate is contacted with reverse osmosis membrane to form the first solution containing aroma and flavor with lower alcohol content and a second solution with higher alcohol content, and Michaels discloses reduction of alcohol content by (a) contacting one surface of a microporous hydrophobic membrane with the aqueous mixture; and (b) contacting the other surface of the membrane with water or a dilute aqueous saline solution, one of ordinary skill in the art would have been motivated to modify Nielsen in view of Michaels and to substitute step (C) disclosed by Nielsen

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with steps (a) and (b) disclosed by Michaels for the same purpose and function, i.e. in order to form dealcoholized solution with high aroma and flavor content and another solution with high alcohol content. One of ordinary skill in the art would have been motivated to do so, since both references disclose forming the first solution containing aroma and flavor with lower alcohol content and a second solution with higher alcohol content. One of ordinary skill in the art would have been motivated to do so, since both references disclose similar methods of removal of alcohol from the naturally fermented beverage.

In regard to claim 10, Nielsen discloses wine which has higher concentration of flavor and aroma (page 8 paragraph 1). One of ordinary skill in the art would have been motivated to select membrane parameters that would lead to a maximum amount of volatile components (flavor and aroma) in order to produce a lower alcohol beverage while still retaining the aroma and flavor of the original beverage as disclosed by Nielsen (page 1 bottom paragraph).

In regard to claim 11, Nielsen discloses treatment of wine (page 9 paragraph 3). Michaels also discloses treatment of wine (page 7 Example 3).

In regard to claims 12 and 39, Michaels discloses that strip solution is water or aqueous solution.

In regard to claims 15-17, Nielsen and Michaels do not disclose specific alcohol content of the dealcoholized fractions. Since both Nielsen and Michaels disclose reduction of an alcoholic content of the fermented beverages by forming dealcoholized fractions, and Michaels discloses that rates of transfer through the membrane alcohol

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and flavors/fragrances vary through manipulations of the extracting solution (stripping solution), one of ordinary skill in the art would have been motivated to adjust membrane parameters and to manipulate extracting solution as taught by Michaels, in order to achieve desired level of alcohol removal and flavors/fragrances transfer.

In regard to claim 19, Nielsen and Michaels do not disclose determining if the alcohol content of the dealcoholised beverage is at or below a predetermined level and continuing to perform removal of alcohol from the beverage while the alcohol content of the dealcoholised beverage is above said predetermined level. In any case, one of ordinary skill in the art would have been motivated to verify the alcohol content of the low alcohol beverage and to further performed method steps as taught by Nielsen and Michaels until the desired alcohol content of the fermented beverage is reached.

In regard to claim 30, combination of Nielsen and Michaels discloses the method as claimed in claim 6, and therefore disclose the beverage made by such method.

In regard to claims 33 and 34, Nielsen discloses that "A. or B. must be performed, and if step B is performed the reverse osmosis retentate and the nanofiltration retentate are recombined subsequent to step C" (page 7 bottom paragraph-page 8 paragraphs 1-3). Nielsen further discloses "[t]hereafter, the retentate from the nanofiltration membrane, and the retentate from the reverse osmosis process are recombined, optionally with water, to prepare a reconstituted naturally fermented beverage which contains substantially all of the aroma and flavor containing compounds, with a significantly lower concentration of an ethanol therein" (page 13 top paragraph). Therefore, Nielsen discloses mixing of two fraction resulting from two

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separate membrane process to obtain dealcoholized beverage as claimed. It would have been obvious to return the mixture in the container with the processed beverage.

**Claims 7, 8, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nielsen (WO 92/08783) in view of Michaels (WO 93/22036) as applied to claim 6 above, and further in view of Zhang et al (6,586,638).**

In regard to claims 7 and 8, Nielsen and Michaels do not disclose heating the strip solution to a temperature which is higher than that of the beverage prior to contacting the strip solution with the membrane.

Zhang discloses process for removing and recovering one or more unassociated phenolic compounds dissolved in aqueous fluid (Abstract). Zhang discloses "the aqueous fluid and/or the alkaline stripping solution of the present invention may be heated before or during contact with the membrane. The aqueous fluid and/or the alkaline stripping solution of the present invention may have a temperature above room temperature (25°C). This may increase the rate of mass transfer across the non-porous membrane" (Col. 8 bottom paragraph -Col. 9 top paragraph) .

One of ordinary skill in the art would have been motivated to modify Nielsen and Michaels in view of Zhang and to heat the strip solution to a temperature which is higher than that of the beverage prior to contacting the strip solution with the membrane for the benefits as disclosed by Zhang. One of ordinary skill in the art would have been motivated to do so, since Zhang discloses heating stripping solution in order to increase the rate of mass transfer across the membrane.

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In regard to claim 37, it is noted that it would have been obvious to cool dealcoholised permeate prior to returning it to the wine tank, so the temperature of the wine in the tank would not experience significant increase. One of ordinary skill in the art would have been motivated to keep the wine in the tank at a room temperature or below, since this temperature range is optimal for the wine storage and stability

**Claims 13, 14 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nielsen (WO 92/08783) in view of Michaels (WO 93/22036) as applied to claim 6 above, and further in view of Zhang et al (6,586,638) in view of Tonelli et al (5,997,745).**

In regard to claims 13 and 14, Nielsen and Michaels are silent as to the removal of carbon dioxide and/or oxygen from the water or raw permeate prior to contacting the membrane. Tonelli et al discloses removal of carbon dioxide and other gases from the permeate prior to contacting with membrane in order to produce purified product that does not cause drastic changes in pH (Col. 7 paragraph 4; Col. 12 bottom paragraph). One of ordinary skill in the art would have been motivated to modify Nielsen and Michaels in view of Tonelli et al and to remove carbon dioxide and other gases (including oxygen) from the permeate prior to contacting with membrane in order to produce purified product that does not cause drastic changes in pH as taught by Tonelli et al.

### ***Response to Arguments***

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Applicant's arguments filed 08/04/2010 have been fully considered but they are not persuasive.

On pages 8 and 9 of the Reply to the Non-Final Office action mailed 03/04/2010, Applicant presents the overview of the Nielsen reference. On page 8 bottom paragraph, page 9 top paragraph, Applicants states that:

Importantly, the Nielsen reference teaches that the permeate from its reverse osmosis step is discarded and water is added to replace the volume of permeate removed. Page 12, lines 26-29. In this way, the Nielsen process is like that described in Applicant's specification on page 3, lines 11-17, and it presents the same difficulties.

Examiner respectfully disagrees./ Applicant is referred to the page 12, lines 26-29 of Nielsen reference with state the following:

Optionally, water may be added to the reverse osmosis retentate so as to replace the volume of the liquid which permeates through the reverse osmosis membrane.

Therefore addition of water is optional, and not required by the method disclosed by Nielsen.

On pages 9 and 10 of the Reply, Applicants states that:

To achieve a reduced alcohol concentration in the beverage, it is necessary to separate ethanol from water at some point, and the Nielsen reference really achieves this by adding new water to replace the volume of permeate removed. With water addition the alcohol concentrate of the beverage will indeed fall, but this is because of dilution by water addition then concentration by RO to remove the same volume of liquid. In effect the ethanol is washed out in the permeate of the reverse osmosis step while flavor and aromas are retained.

It is important to note that this process as described in Nielsen does not involve any treatment and recombination of reverse osmosis permeate

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with the reverse osmosis retentate, which is part of the process of claim 6. In the Nielsen process, the apparent recombination step is for the retentate of the micro- and nanofiltration pre- treatment stage at which no alcohol adjustment takes place. Indeed, in Nielsen as the preliminary nanofiltration stage is optional, if it is removed and only microfiltration is incorporated, then there would be no means to preserve the valuable flavors and aromas which might be damaged or lost in the alcohol reduction stage. This suggests that Nielsen did not see the essential need for nanofiltration which, as an optional alternative to reverse osmosis, is a fundamental first step in the Applicant's process

Examiner respectfully disagrees. As stated immediately above, and as noted throughout Nielsen reference addition of water is optional and is not required (see at least page 12, lines 26-29 of Nielsen reference). Further in regard to this argument, it is noted that Nielsen discloses different embodiments of the invention, where optional microfiltration step is performed prior to the nanofiltration step and is designed to remove "high molecular turbidity causing compounds" (page 13 lines 22-23). The nanofiltration step is not optional in one of the invention embodiments as disclosed by Nielsen (pages 12-13). Further in this regard, it is noted that claims are rejected as being unpatentable over Nielsen (WO 92/08783) in view of Michaels (WO 93/22036). Thus, claims are rejected over the combination of references.

On page 11 of the reply, Applicant discusses Michaels reference and states that there is no reason to modify Nielsen in view of Michaels. Examiner respectfully disagrees. Michaels discloses a process for reducing the alcohol content of an aqueous mixture comprising the steps of:

(a) contacting one surface of a microporous hydrophobic membrane with the aqueous mixture;

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(b) contacting the other surface of the membrane with water or a dilute aqueous saline solution. Therefore, Michaels discloses forming dealcoholized permeate by contacting a first side of a hydrophobic microporous membrane with said raw permeate and contacting a second side of the membrane with a strip solution to extract alcohol therefrom to form a dealcoholised permeate. Since Nielsen discloses dealcoholization of a naturally fermented beverage, where nanofiltration permeate is contacted with reverse osmosis membrane to form the first solution containing aroma and flavor with lower alcohol content and a second solution with higher alcohol content, and Michaels discloses reduction of alcohol content by (a) contacting one surface of a microporous hydrophobic membrane with the aqueous mixture; and (b) contacting the other surface of the membrane with water or a dilute aqueous saline solution, one of ordinary skill in the art would have been motivated to modify Nielsen in view of Michaels and to substitute step (C) disclosed by Nielsen with steps (a) and (b) disclosed by Michaels for the same purpose and function, i.e. in order to form dealcoholized solution with high aroma and flavor content and another solution with high alcohol content. One of ordinary skill in the art would have been motivated to do so, since both references disclose forming the first solution containing aroma and flavor with lower alcohol content and a second solution with higher alcohol content. One of ordinary skill in the art would have been motivated to do so, since both references disclose similar methods of removal of alcohol from the naturally fermented beverage.

On pages 12 and 13 of the Reply, Applicant presents arguments related to the apparatus for the production of the beverage. These arguments are not found

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persuasive, since the claims are directed to the method for the production of beverage, and not the apparatus.

In response to applicant's arguments against the references individually (page 13 bottom paragraph, page 14 top paragraph of the Reply), one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The claims are rejected as being unpatentable over the combination of references Nielsen (WO 92/08783) in view of Michaels (WO 93/22036). Michael is not relied upon as a teaching of direct treatment of wine in the contactor. Zhang is not relied upon as a teaching of a non-porous membrane. Zhang is relied upon as a teaching of heating the aqueous fluid stripping solution before or during contact with the membrane.

In response to applicant's argument that Zhang and Tonelli et al are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Zhang discloses process for removing and recovering one or more unassociated phenolic compounds dissolved in aqueous fluid using membrane process (Abstract). Claims and references as applied are also directed to the treatment of liquids with membranes in order to remove/recover various compounds. Tonelli et al discloses removal of carbon dioxide and other gases from the permeate

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prior to contacting with membrane in order to produce purified product that does not cause drastic changes in pH. therefore, Tonelli et al also directed to the membrane treatment of liquids.

In response to Applicants argument regarding secondary consideration, it is noted that such evidence has not been submitted as a Declaration under 37 C.F.R. § 132, and therefore has not been considered.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VERA STULII whose telephone number is (571)272-3221. The examiner can normally be reached on 7:00 am-3:30 pm, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571) 272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Vera Stulii/  
Examiner, Art Unit 1781

/Keith D. Hendricks/  
Supervisory Patent Examiner, Art Unit 1781